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THE POWER ECONOMY OF POLAND

ELECTRIC POWER AND THE ELECTRICAL INDUSTRY

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/Tables follow the bibliography for this article/

Reserves of black coal in Poland are calculated as 76.6 billion tons, of which 7.7 billion tons are located in the western wojewodstwos. Reserves of brown coal are estimated to amount to 18 billion tons, of which 5 billion tons are located in Poznan Wojewodstwo and 7 billion tons in Ziemia Lubuska in the west. Table 1 shows Polish fuel production.

Peat production on an industrial scale began in 1949. The 1949 plan called for the production of 228,800 tons of peat for heating purposes, 12,000 tons of peat briquettes, 419,000 bales (a bale weighs from 60 to 100 kilograms) of peat stable litter, and 75,000 square meters of insulating tiles.

The 1946 hydroelectric power production amounted to 360 million kilowatt-hours, or 6.3 percent of all the power produced in 1946. The capacity of hydroelectric power plants in 1946 was 5.6 percent of the capacity of all power plants, or 119,000 kilowatts.

The 1946 Poland had 36 hydroelectric power plants, or 16.25 percent of all power plants in the country. The average capacity of the hydroelectric plants was 3,300 kilowatts, as compared to 1,600-kilowatt average capacity of all power plants in Poland. (All the above data applies to power plants which have an installed capacity of 1,000 kilowatts or over.)

Production of power (in million kilowatt-hours) by plants with a capacity of over 1,000 kilowatts is as follows: 3,972.0 in 1938, 5,709.0 in 1946, 6,613.5 in 1947, 7,514.4 in 1948, 8,111.0 planned for 1949, and 18,000.0 planned for 1955. Table 2 gives a breakdown of this power production by types of power plants (in million kilowatt-hours).

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Production of power per capita per year (in kilowatt-hours) averaged 110 between 1933 and 1937, 275 in 1947, 315 in 1948; 800 is the figure planned for 1955, according to the Six-Year Plan.

During 9 prewar years, the increase in the production of power was only 902 million kilowatt-hours, while the increase between 1945 and 1949 was 2,400,000,000 kilowatt-hours.

According to data of the Power Administration, the total installed capacity of power plants on 1 January 1946 was 2,300,000 kilowatts, and on 1 January 1948, 2,422,000 kilowatts. The number and capacity of power plants up to 1 January 1948 are shown in Table 3 (for plants with a capacity of 1,000 kilowatts or over).

The total length of high-tension power lines in 1945 was 31,000 kilometers, in 1946 44,000 kilometers, and in 1948 51,000 kilometers. The plan for 1955 calls for 76,000 kilometers of power lines. The 120-kilometer high-tension power line constructed in 1948 forms the beginning of Gorny Slask and Dalny Slask connection. The line which connects Pomorze and Poznan wojewodztwos is also of great significance. The Poznan-Gorzow line has already been constructed. The Szczecin-Stargrad line, which is under construction, is a part of the Szczecin-Gorzow line. These and other lines form a 110-kilovolt high-tension power network. A total of 4,000 kilometers of new power lines have been constructed recently.

The 1948 capital investments in the Polish power industry amounted to 4.3 billion zlotys or about 1.9 percent of all 1948 investments. Of this amount about 2.15 billion zlotys were spent for the construction of new power plants, 1.58 billion zlotys for capital maintenance, and 710 million zlotys for electrification of villages.

In 1940, 481 villages were electrified; in 1947, 570 villages; and in 1948, 627 villages. At the end of 1948, Poland had 10,290 electrified villages. The number of power consumers in rural areas increased from 70,000 in 1945 to 320,919 in 1948. In 1949 11,651 villages had been electrified and there were 370,000 consumers of power in these villages. Power consumption in villages in 1948 was 79 million kilowatt-hours.

During the war 85 percent of the Polish electrical industry was destroyed. The capital investment of the electrical industry in 1937 amounted to 140 million zlotys, while immediately after the war it was only about 90 million zlotys (with the inclusion of regained territories).

The increase in the production of the electrical industry between 1945 and 1949 is as follows (1939 = 100):

	1945	1946	1947	1948	Plan for 1949
Index amount of production	7	37	77	136	177

According to the Six-Year Plan the electrical industry production increase is as follows:

	1949	1950	1951	1952	1953	1954	1955
Index amount of production							
1949 = 100	100	132	152	182	225	276	327
1939 = 100	177	216	269	322	398	489	579

The 1947 production in the electrical industry amounted to 168.7 million zlotys in terms of 1937 prices.

The total number of enterprises and their form of ownership up to 1 January 1947 is shown in Table 4.

Production of the nine important types of products of the electrical industry is shown in Table 5.

The total cost of 1955 electrical industry production is slated to amount to 980 million zlotys (1937 prices), which is 280 percent above 1949 production.

The fluctuations in production, according to the Six-Year Plan, are shown in Table 6.

According to the Six-Year Plan, the 1955 production of electrical machinery will be four times larger than in 1949. The production of asynchronous machines in 1955 will be 6.5 times greater in terms of power than in 1949. The average yearly output of transformers will be twice as great in 1955 as it was in 1949 and their capacity will be increased also. In addition to voltage transformers, also current transformers, turbogenerators, electric locomotives, and rectifying instruments for tractor substations will be produced in Poland in the near future. An increase in the production of electric apparatus and equipment for the automobile industry is contemplated.

By the end of the Six-Year Plan the production of control and measuring instruments will have increased five times over present production.

The production of low-tension distributing apparatus will also increase. The actual production of electric apparatus will be six times as large in 1955 as it is now. About 2,400 tons of products amounting to 15 million zlotys (1937 prices) will be manufactured in 1955.

Production of iron and nickel storage batteries will be mastered soon. In 1955 the production of batteries, chiefly from domestic materials, will reach the 20-million mark.

According to the plan, 350,000 radio receivers will be built in 1955. In 1938 only 142,000 receivers were built. In comparison with 1949, the production of telephones will be six times greater in 1955.

The 1955 production of electric lamps will surpass 1949 production by 70 percent, as a total of 30 million lamps are scheduled to be produced. Poland will produce also gaslight pipes, mercury vapor lamps, and automobile lights. The production of radio tubes will facilitate the establishment of a Polish radio industry. The production of intermediate products in electric lamp enterprises will be increased in the future.

A considerable expansion is planned in the production of cables and electric conductors, as well as in the electrification of railroads.

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Table 1. Fuel Production

	Unit	1938	1946	1947	1948	1949 Plan
Black coal	1,000 tons	69,400	47,290	59,130	78,260	74,000
Brown coal	" "	5,022	1,454	4,766	5,041	
Petroleum	" "		117	128		
Natural gas	Million cu m		149.3	148.3		
Gas from coal	Million cu m		189.1	237.5		

Table 2. Power Production
(in million kw-h)

	1946	1947
Production of electric power:		
By public utility power plants	3,432	3,976
By industrial power plants	2,277	2,637
Including:		
Coal industry	1,260	1,428
Metallurgy	216	228
Chemical industry	372	444
Cement industry	103	132
Textile industry	96	132
Sugar industry	40	51
Paper industry	132	168
Other branches of industry	58	54

Table 3. Number of Power Plants

	No of Plants	Rated Power (1,000 kw)
Total for all power plants	232	2,284
Public utility power plants	97	1,196
Including hydroelectric power plants	36	139
Industrial power plants	135	1,088
Including:		
Coal industry	37	583
Metallurgy	10	95
Chemical industry	11	133
Cement industry	7	36
Paper industry	7	57
Textile industry	20	57
Sugar industry	31	98
Other branches of industry	14	29

Table 4. Electrical Enterprises and Employment

	Total Enterprises 1 Jan 47	Including			Total Workers at Enterprises	Including		
		State	Cooperative	Private		State	Cooperative	Private
Total for electrical industry	1,541	142	16	1,383	18,245	13,304	214	4,727
Including:								
Production of machines and transformers	22	11	1	10	1,994	1,837	15	142
Production of apparatus and electrical materials	65	21	-	44	3,529	3,090	-	439
Repair and installation enterprises	1,340	63	11	1,266	6,074	2,435	120	3,519

Table 5. Production of the Polish Electrical Industry

	Unit	1946	1947	1948	1949 Plan
Electric motors	Pieces	8,841	14,830	26,198	40,000
Transformers	"	566	1,447	10,625	
Cables	Tons	3,100.4	7,434.8	14,008	
Electric lamps and tubes	1,000	7,491	10,903	18,939	18,000
Including:					
Standard	"	4,158	6,703	13,196	
Miniature	"	2,797	3,287	3,779	
Others (radio tubes, etc.)	"	536	913	1,964	
Telephone apparatus	Pieces	1,440	31,945	68,648	
Radio receivers	"	-	7,387	33,704	
Meters	"	6,260	61,000	118,250 *	185,000
Oil breakers	"	141	304	730 *	
Storage batteries	Tons	-	1,879	3,662	

* Figure for Three-Year Plan, drawn up in 1946.

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Table 6. Percentage Breakdown of Electrical Production

	1946	1949	1955
Electrical industry (total output)	100	100	100
Including output of:			
Electrical machines	15.9	17.5	22.5
Electrical apparatus	16.3	18.5	23.0
Cables	38.6	29.0	18.4
Storage batteries	12.0	7.7	5.4
Electric lamps	11.3	13.6	14.9
Radio parts	5.9	13.7	15.8

PROJECTED POLISH POWER PROJECTS

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No 4, Apr 48

The following power projects are scheduled to be constructed or completed in Poland in the next few years:

1. A large power plant in Mechowice for the purpose of exploiting low-grade coal of the Gliwice basin. Construction of this power plant has begun already. It will have a capacity of 300,000 kilowatts and will be twice as large as the "Elektro" Power Plant in Laziska Gorne.

2. The power plants in Szombierki and Zabrze, with a combined capacity of 105,000 kilowatts.

3. Completion and putting into operation at the end of 1949 of some of the units of the power plant in Gorzow, which will have a capacity of 42,000 kilowatts.

4. Four new units of the power plant in Borowa Gora, located near the mouth of the Bobrawa River, which will begin operation in 1949 and will produce 70 million kilowatt-hours per year.

5. The 10,000-kilowatt hydroelectric power plant in Czchow, which is under construction and is to be the second largest hydroelectric plant (the largest is the power plant at Roznow). Both power plants are located on the Dunajec River. The yearly production of the plant at Roznow will be 146 million kilowatt-hours at the end of the Three-Year Plan, and that of the plant at Czchow will be 40 million kilowatt-hours.

The power plants in Gdynia, Szczecin, Borowa Gora, Czechowice, and Elblag are to be expanded.

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